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ABSTRACT

Field testing of the Money Unit of the Money, Measurement and Time Program was conducted with 23 elementary school classes of educable mentally handicapped (EMH) children. The 210 Ss were assigned to the experimental group, the Hawthorne group, or the control group. Two criterion referenced tests were administered to Ss to evaluate the effectiveness of the Money Unit which was designed as a means of concept and vocabulary development for young handicapped learners. Testing demonstrated that the unit significantly increased the EMH child's knowledge of money skills and vocabulary. The effectiveness was indicated by pretest and posttest gains, by performance levels on individual items, and by retention data. Analyses of community location effects showed that the unit was highly effective in rural and suburban communities as well as in the urban communities. Teachers expressed a preference for the unit over other instructional materials. (GW)

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SUMMATIVE EVALUATION OF THE MONEY UNIT OF THE MONEY, MEASUREMENT AND TIME PROGRAM[1]

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The University of Minnesota Research, Development and Demonstration Center in Education of Handicapped Children has been established to concentrate on intervention strategies and materials which develop and improve language and communication skills in young handicapped children.

The long term objective of the Center is to improve the language and communication abilities of handicapped children by means of identification of linguistically and potentially linguistically handicapped children, development and evaluation of intervention strategies with young handicapped children and dissemination of findings and products of benefit to young handicapped children.

Summative Evaluation of the Money Unit of the Money, Measurement and Time Program[1]

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Evaluation in education generally refers to "the collection and use of information to make decisions about an educational program" (Cronbach, 1963). Most attempts at evaluation have accepted this definition, although many have chosen to expand upon it, or to delimit it (cf., Dershimer, 1968). Scriven (1967) has made a distinction between "formative" evaluation and "summative" evaluation. Formative evaluation is that which occurs during the development of instructional materials. One of its major purposes is to identify ways in which the instruction can be improved as it is being developed. Summative evaluation refers to the assessment of the "final" instructional product in a field-test situation. Its major purpose is to evaluate the effectiveness of the product in the classroom.

Over the past two years instructional materials produced by the Vocabulary Development Project of the University of Minnesota's Research, Development and Demonstration Center have been subjected to both formative and summative evaluations. The materials, referred to as the Money, Measurement and Time Program, were developed for educable mentally retarded (EMR) children. As each unit in the Program was being developed, it underwent an extensive formative evaluation process (cf., Krus, Thurlow, Turnure, Taylor, & Howe, 1974). Revisions of all units were made on the basis of the feedback from the formative evaluations in

order to prepare them for use in a large-scale field-test. The summative evaluation of the units occurred during this field-test.

The present paper is a description of the summative evaluation of the Money Unit, one of the five units in the Money, Measurement and Time Program. Formative evaluation of the Money Unit took place over a period of one and one-half years, and produced a revised unit which seemed to be extremely effective for EMR children (Thurlow, Krus, Howe, Taylor, & Turnure, 1974). The purpose of the summative evaluation of the Money Unit was to test the effectiveness of the revised unit and its useability in the classroom when interactions between Project personnel and field-test participants were minimal.

The Money, Measurement and Time Program

The Money, Measurement and Time Program (Thurlow, Taylor & Turnure, 1973) is an instructional program designed specifically for young educationally handicapped learners. The Program includes five units: 1) Money, 2) Measurement of Length, 3) Measurement of Weight, 4) Time with the Clock, and 5) Time with the Calendar. Systematic instruction is provided in these areas, without requiring that the children have reading or computational skills. Further information about the specific instructional units in the Program is available in the Teacher's Introduction to the Program (Thurlow, Taylor & Turnure, 1973).

The Money, Measurement and Time Program was developed from basic learning strategies research, such as research on mental imagery and verbal elaboration. It represents one of the first attempts to translate these recently developed areas of experimental research into an instructional program for EMR children.

The general aims of the Money, Measurement and Time Program were to develop vocabulary and related skills, and furthermore, to promote general language development and the development of effective learning strategies. Several specific goals of the Program included: 1) an improved understanding of the critical vocabulary, and thereby better understanding of the general area of instruction (money, measurement, or time), 2) the development of beginning skills in the particular area of instruction, with an emphasis on use of these skills in every-day situations, 3) an increase in general language development, especially expressive communication, and 4) the use of effecient learning and memory strategies in any area of instruction.

Money Unit

The Money Unit is the largest of the five instructional units in the Money, Measurement, and Time Program. It was developed jointly by educational practitioners and educational researchers to provide EMR children with an understanding of money and its functions. The Unit was first produced in a pilot-test form and, as stated previously, underwent extensive formative evaluation and revision (Thurlow, Krus, Howe, Taylor, & Turnure, 1974). The revised form was employed in the field-test and subjected to summative evaluation. It is the revised form which is described here.

The Money Unit consists of four books of instruction that begin by developing a general awareness of the function and uses of money. The books then proceed to teach the recognition of the different kinds of U.S. money, their relative values, and their exact values. Because the Program is designed to provide instruction that could be

applicable to every-day situations, training in counting money and making change is included in the instruction, as well as practical applications in store situations. Children may begin instruction at various entry points depending on their beginning skills. Individually administered assessment instruments are provided for initial diagnostic placement and for determining final achievement.

The instructional content of the four books of the Money Unit was written to stress the gradual and closely structured development of both money vocabulary and money skills. The four books in the Money Unit generally represent progressive levels of instruction, from the lowest to the most advanced. Certain behavioral objectives must be mastered before children may progress from one book of instruction to the next book. Thus, depending upon the ability of the children, each book of instruction can take from two weeks to several months to complete.

Each book in the Money Unit is composed of lessons which contain instruction related to one or more vocabulary words. Each lesson is associated with specific purposes and behavioral objectives. The lessons within a book are carefully ordered with behavioral objectives in one lesson being requisite for adequate performance in later lessons. A lesson, which often requires several periods of instruction, includes three major components: 1) pre-activities which introduce the concepts or review the meaning of necessary prerequisite concepts, 2) tape presentations which develop the meaning of vocabulary words and the relations between words, and 3) post-activities which review and reinforce the concepts and relations established in the tape presentation.

The Summative Evaluation Plan

Because of time and budget restrictions, the desired field-test plan, in which classes would be allowed to spend at least one year progressing through the instruction in the Money Unit, could not be implemented. Instead, the field-test of the Money Unit was combined with the field-test of the Time with the Clock Unit. This meant that, except for a few classes, instruction in the Money Unit was stopped after three to four months so that the field-test of the Time with the Clock Unit could be started in the same classes. In the few exceptional cases, classes continued with the Money Unit instruction until the end of the year (i.e., a total instructional period of four to five months), without receiving instruction in any other unit. A similar plan was used to test the Measurement of Length and Measurement of Weight Units.

Method

Design

For the summative evaluation of the Money Unit, a two factor design (Treatment X Community) was employed. The major factor of interest was the instructional treatment factor. The three treatments in the present design were: 1) Experimental, 2) Hawthorne, and 3) Control.

The Experimental treatment group represented those classes receiving the Money instructional program. These classes did not receive any supplemental money instruction.

The Hawthorne treatment group consisted of classes receiving instruction in the Measurement of Length Unit from the Money, Measurement and Time Program. The Hawthorne group was included in the design as one

type of control. Gains on the Money tests by this group would represent changes in performance one could expect from the "novelty" of a new program in the classroom, interactions with testers, "learning-to-learn," and several other related factors. To conclude that the Money Unit instruction itself contributed significantly to performance increases, one must discover that the Experimental group performed significantly better than the Hawthorne control group.

The Control treatment group represented those classes where teachers were left on their own, either to teach or to not teach money concepts. When these teachers chose to teach money, they were allowed to use any materials available to them (e.g., published materials, teacher-developed materials, etc.), but they were not allowed to use the Money Unit from the Money, Measurement and Time Program.

The second factor in the design was that of community location (urban, rural, or suburban). Urban communities included three of the four major cities in Minnesota. Suburban communities were classified as those which immediately adjoined these cities, and which were called "suburbs" by the communities themselves. Rural communities included those not covered by the above classification systems. It should be pointed out, however, that the communities labeled as "rural" for this investigation may be somewhat different from the usual conception of "rural". For instance, there were two colleges in one of the rural communities, and one in another. Also, it was noted that many academic and professional people lived in some of the "rural" areas and commuted to work in a nearby urban community. Communities categorized in this manner, however, concurred with the categorization scheme of the Minnesota Department of Education.

Subjects

The population employed for field-testing during the summative evaluation was elementary school-aged educable mentally retarded children. Of the 23 classes employed during the presented field-test, eight classes (2 urban, 3 rural, and 3 suburban) were chosen to be in the Experimental treatment (i.e., they received instruction from the Money Unit), eight classes (2 urban, 3 rural, and 3 suburban) were included in the Hawthorne control treatment (i.e., they received instruction in the Measurement of Length Unit), and seven classes (2 urban, 2 rural, and 3 suburban) were included in the Control treatment (i.e., they recieved instruction from any source other than the Money Unit, if the teacher chose to give it to them). Assignment of the classes to treatments was made so that the lower functioning classes were included in the Hawthorne group. This was done so that some classes would enter the instruction at the beginning of the Measurment of Length Unit, which was considered to provide instruction on especially low-level concepts.

Overall, there were 71 children (15 urban, 31 rural, and 25 suburban) in the Experimental group, 69 (16 urban, 24 rural, and 29 suburban) in the Hawthorne group, and 70 (16 urban, 23 rural, and 31 suburban) in the Control group. It should be noted, however, that the specific numbers of children for whom data from specific tests were available varied due to testing procedures (see below) and absenteeism.

A summary of the children's IQs, mental ages (MAs) and chronological ages (CAs) in the three treatment groups is presented in Table 1, along with the results of a one-way factorial analysis on each measure. Again, it should be noted that the number of subjects sometimes varied with the measure due to incomplete test data. Clearly, the three groups did differ significantly in IQ level and MA level. A Newman-Keuls test for differences between the IQ means indicated that the Control group had a significantly higher IQ than the Hawthorne group ($p < .01$) and that the Experimental group also had a significantly higher IQ than the Hawthorne group ($p < .05$). The Experimental and Control groups did not differ. A Newman-Keuls test on the MA means similarly revealed that both the Control ($p < .01$) and Experimental ($p < .05$) groups had higher MAs than the Hawthorne group. The Experimental and Control groups did not differ significantly.

Table 2 presents the IQ, MA, and CA data arranged according to community location. One-way factorial analyses revealed a significant effect of community location for each measure. Newman-Keuls tests for differences indicated that children in both the rural and urban communities had significantly higher mean CAs and MAs than those in the suburban community (all $ps < .01$), with the rurals also significantly higher than the urbans in terms of MA level ($p < .01$). In terms of mean IQs, the suburban ($p < .01$) and the rural ($p < .05$) communities were higher than the urban community.

Tests

Two criterion-referenced tests were administered to the children

Table 1

Comparisons Between the Three Treatment Groups on IQ, MA, and CA

	Experimental	Hawthorne	Control	F
IQ				
$\bar{X}$	72.3	68.7	74.8	7.51
SD	8.1	9.7	9.4	($p < .001$)
Range	47-89	47-89	56-93	
n	71	64	64	
MA(months)				
$\bar{X}$	77.1	69.6	78.3	6.32
SD	10.6	14.8	14.5	($p < .005$)
Range	47-105	40-108	55-118	
n	71	65	64	
CA(months)				
$\bar{X}$	106.5	99.3	104.0	2.70
SD	13.9	21.8	19.3	(ns)
Range	81-136	63-145	75-142	
n	71	69	70	

Table 2

Comparisons Between the Three Community Locations on IQ, MA, and CA

	Urban	Rural	Suburban	F
IQ				
$\bar{X}$	68.4	71.7	74.1	
SD	9.6	8.4	9.6	5.59
Range	47-85	49-88	47-93	($p < .005$)
n	44	76	79	
MA (months)				
$\bar{X}$	75.8	81.4	58.8	
SD	12.5	13.3	12.5	19.00
Range	50-103	40-118	41-105	($p < .001$)
n	44	76	80	
CA (months)				
$\bar{X}$	111.2	112.6	90.7	
SD	15.6	16.8	14.3	47.99
Range	78-144	78-145	63-121	($p < .001$)
n	47	78	85	

to determine the effectiveness of the Money Unit instruction. Each test was administered as a pretest, and at the same time, to determine the placement of a class within the sequence of instruction. The same tests were administered as posttests after Experimental group instruction in the Unit was stopped.

The Money Skills Test was a twenty item test designed to determine the child's functional understanding of money and money skills. It consisted of five subtests which evaluated skills ranging from simple recognition to counting money. The test was administered to all children (except, of course, those who were absent, etc.).

The Money Expressive Test was a twenty item test designed primarily to evaluate the child's ability to utilize specific vocabulary words. It consisted of four subtests which corresponded to the four instructional books of the Money Unit. This test was administered to only one-half of the children in each class in the present field-test. Administration was made randomly. The decision to reduce the data on this test was made in light of the excessive testing burdens put upon the classrooms and children participating in the field-test.

A Cognitive Abilities Test (Thorndike, Hagen, & Lorge, 1968) was also administered to the children particpating in the present field-test. Since this test was employed to evaluate the child's general improvement in non-content-specific areas of cognitive functioning after a full year of instruction in the Money, Measurement and Time Program, the results of this test will not be described here.

Procedure

The field-test of the Money Unit was conducted over a period of three to five months. The goal of this field-test was to assess the

Unit under relatively "normal" classroom conditions, with minimal interaction between Project personnel and field-test participants.

Before instruction was started, children in each class were pretested on the Money Unit tests (Skills and Expressive) and the Cognitive Abilities Test. Then, each teacher in the Experimental treatment group attended a brief in-service training session designed to introduce the Money, Measurement and Time Program, the field-test plan, and specifically, the Money Unit. Interactions with the classes stopped at this point (except for "comment cards" returned to Project Directors when the teachers felt comments were necessary), until posttesting time

After instruction ended, classes were posttested on the Money Unit tests. (The Cognitive Abilities Test was administered at the end of the year.) At this point, Experimental teachers were requested to complete a detailed questionnaire on their reactions to the Unit, and to the Program in general. Control teachers were also asked to describe any instruction related to money that they had used during the same period.

Approximately two months after Money Unit instruction had been stopped, a random sample of children who had received the instruction were retested on the Money Skills Test and the Money Expressive Test. The purpose of this retesting was to obtain a measure of content retention.

Results

The amount of data collected during the summative evaluation of the Money Unit was massive. The major sources of effectiveness data were the results of the pretesting and the posttesting. Because of

absenteeism, testing procedures, school schedules, etc., only a limited number of the children participating in the field-test received both the pretests and the posttests for the Money Unit. In order to benefit from the larger n's of the total sample receiving the instruction, it was decided that all pretest data and all posttest data would be analyzed, even though exactly the same children were not in each sample. These results are presented in two sections: 1) Pretest comparisons, and 2) Posttest comparisons. Although based on a reduced sample size, the pretest to posttest comparisons presented next in the Results section are probably most reliable. These reflect the data of just those children who were pretested and posttested on the same measure.

Data relating to the performances of the three treatment groups on individual test items will also be presented. These data not only provide further effectiveness information, but also have the potential for identifying possible areas where revision of the instruction should be undertaken.

The Results section will conclude with three additional sets of results. These results deal with: 1) Community location comparisons, 2) Retention findings, and 3) Feedback from teacher evaluations.

Pretest Comparisons

In order to compare the posttest results of the three treatment groups (and so, assess the effectiveness of the Money Unit), the pretest scores on the two Money Tests must first be compared to show that there were no differences between the three treatment groups before instruction. Table 3 presents the means and standard deviations of the pretest scores on the Money Skills and Money Expressive tests,

Table 3

Comparisons of Three Treatment Groups on

Money Skills and Money Expressive Pretests

Money Skills Test (20 items)

	Experimental	Hawthorne	Control	F
$\bar{X}$	4.56	2.76	4.53	2.34
SD	4.61	4.26	5.00	(ns)
n	71	43	45	

Money Expressive Test (20 items)

	Experimental	Hawthorne	Control	F
$\bar{X}$	9.19	5.30	7.82	4.59
SD	3.87	4.21	4.92	($p < .01$)
n	36	30	34	

and the results of a one-way anova for each test.

There were no significant differences between the treatment groups on the Money Skills pretest. However, there were significant differences on the Money Expressive pretest, where the Hawthorne group subjects scored significantly below the other two groups (Newman-Keuls test, $p < .05$). The low scores of the Hawthorne subjects perhaps reflect their lower mean IQ and MA levels. There was no statistical difference between the Experimental group and the Control group on either pretest. The finding of a significant difference between the Hawthorne group and the Experimental and Control groups on the Expressive test necessarily restricts the conclusions which can be drawn from posttest differences on the Money Expressive Test.

Posttest Comparisons

The means and standard deviations of the posttest scores on the Money Skills and Money Expressive tests, and the results of a one-way anova for each test are presented in Table 4. Analysis of variance techniques and follow-up tests applied to these posttest scores showed that the Experimental group scored significantly higher on both Money tests than the other two groups. Contrasts between the groups indicated the same pattern of results. Specifically, the Experimental group scored significantly higher than the Hawthorne group ($t = 4.1$, $p < .001$) and the Control group ($t = 2.1$, $p < .05$) when taken separately or when compared to the average of the two groups ($t = 4.0$, $p < .001$). Also, there were no significant differences between the Hawthorne group and the

Table 4

Comparisons of Three Treatment Groups on

Money Skills and Money Expressive Posttests

Money Skills Test (20 items)

	Experimental	Hawthorne	Control	F
$\bar{X}$	10.63	5.24	7.77	9.63
SD	4.94	6.36	6.72	($p < .001$)
n	70	29	31	

Money Expressive Test (20 items)

	Experimental	Hawthorne	Control	F
$\bar{X}$	13.43	7.42	9.90	20.08
SD	3.97	5.00	5.39	($p < .001$)
n	70	31	31	

Control group (t = 1.5).

The results of the Money Skills posttest thus seem to clearly indicate the effectiveness of the Money Unit, since no differences existed between groups on the test at pretest time. The posttest results from the Expressive test must be considered more carefully, however, since pretest differences did exist. Clearly, however, the Money Expressive posttest differences are of a greater magnitude and include a difference between Experimentals and Controls which was not found on the pretest.

Pretest to Posttest Comparisons

In order to avoid some of the limitations of analyzing all pretest and all posttest data separately, without recognizing that all children were not both pretested and posttested, a repeated measures analysis of variance for each Money test was conducted. For these analyses, the only subjects used were those for whom both pretest and posttest data were available. Of course, this procedure resulted in a significant decrease in the number of children assessed. Consequently, the means and standard deviations (see Tables 5 and 6) are also somewhat different than those presented in Tables 3 and 4.

The two-way repeated measures analysis of variance of the Money Skills data revealed significant differences between the treatment groups, between pretests and posttests, and a significant treatment by test interaction (see Table 5). The pretest to posttest achievement levels for each treatment group are presented in Figure 1. Posthoc comparisons of the Money Skills means showed that while the pretest scores of the

Table 5

Pretest to Posttest Comparison of Subjects
Receiving both Pre and Post Money Skills Tests

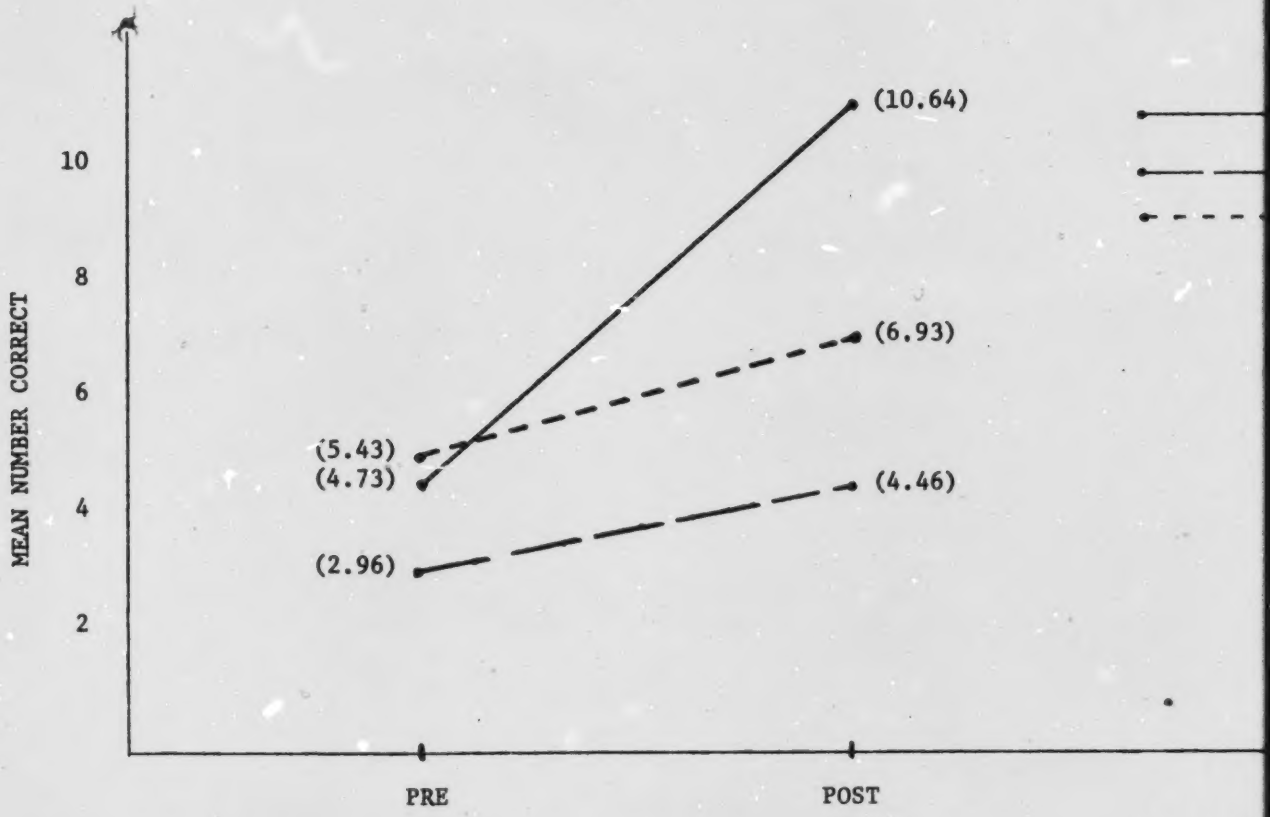
Money Skills Performances

	Experimental		Hawthorne		Control	
	Pre	Post	Pre	Post	Pre	Post
$\bar{X}$	4.73	10.64	2.96	4.46	5.43	6.93
SD	4.66	4.99	4.37	5.62	5.74	6.45
n	64	64	24	24	28	28

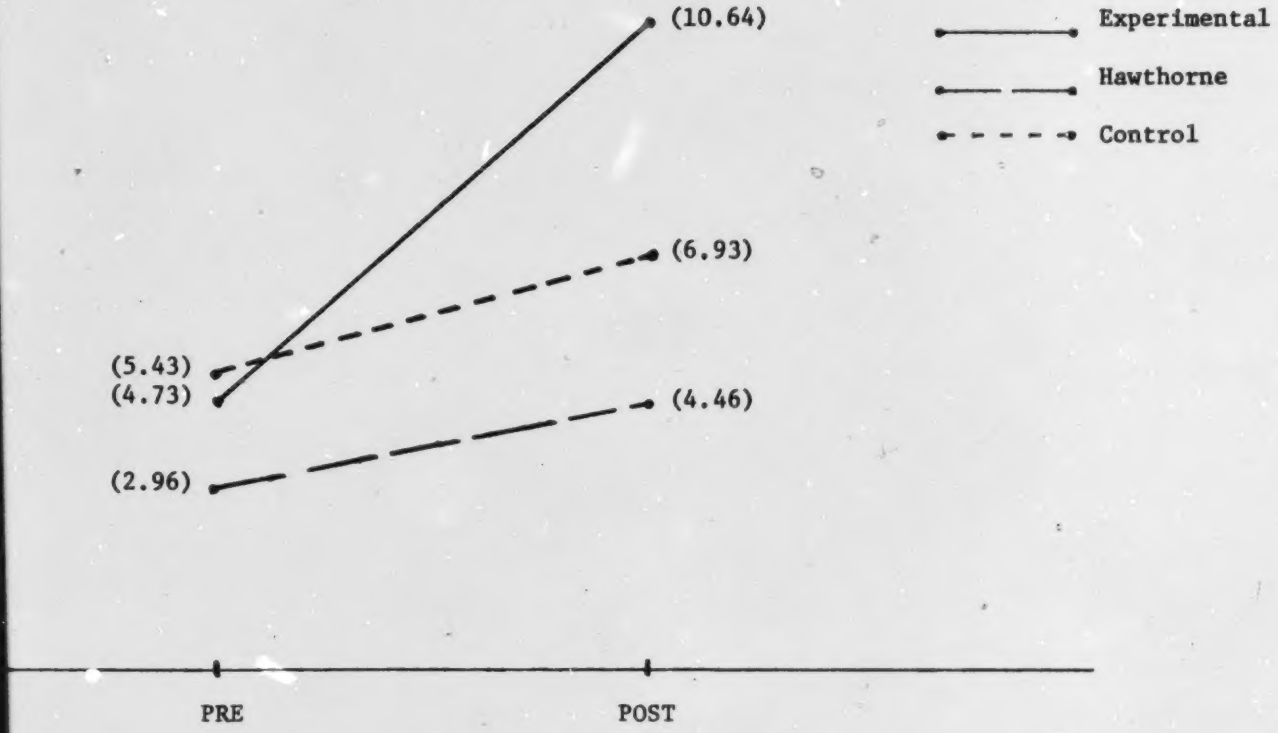
Two-way Repeated Measures ANOVA

Source of Variance	df	MS	F	
Between Ss	115	-	-	
Treatment	2	280.18	5.59	$p < .005$
Error	113	50.10	-	
Within Ss	116	-	-	
Tests (Pre, Post)	1	896.28	173.70	$p < .001$
Treat. X Test	2	124.25	24.80	$p < .001$
Error	113	5.16	-	

Figure 1. Mean achievement level on the Money Skills pretest and posttest for each treat



achievement level on the Money Skills pretest and posttest for each treatment group.



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three groups were not significantly different, the posttest score for the Experimental group was significantly higher than either the Control or the Hawthorne group. The interaction was explained by the large pretest to posttest change in the Experimental group.

The two-way repeated measures analysis of variance of the Money Expressive data revealed the same signicant differences as for the Money Skills test (see Table 6). The pretest to posttest achievement levels for each treatment group on the Money Expressive Test are presented in Figure 2. Posthoc comparisons on these means again showed no pretest differences, but a strong statistical difference between the Experimental group and the Hawthorne group was found at posttest. The difference from pretest to posttest was significant for the Experimental group only.

Item Analyses

The Money Skills and Expressive tests were criterion referenced tests, with items directly related to the behavioral objectives of the instruction. Table 7 presents the pretest and posttest percent correct figures by test items for the Experimental treatment group on the two Money tests. The Experimental group has been subdivided into four groups which received differing amounts of Money instruction. In this table, the items from the two tests have been integrated and grouped according to where instruction related to the items appears in the Unit.

Observation of Table 7 indicates that for almost every item, the Experimental subgroups show a marked increase in pretest to posttest performance when they had received the relevant instruction. Almost all of the children knew the definition of a penny, and most recognized and labeled the other common coins.

Table 6

Pretest to Posttest Comparisons of Subjects

Receiving both Pre and Post Money Expressive Tests

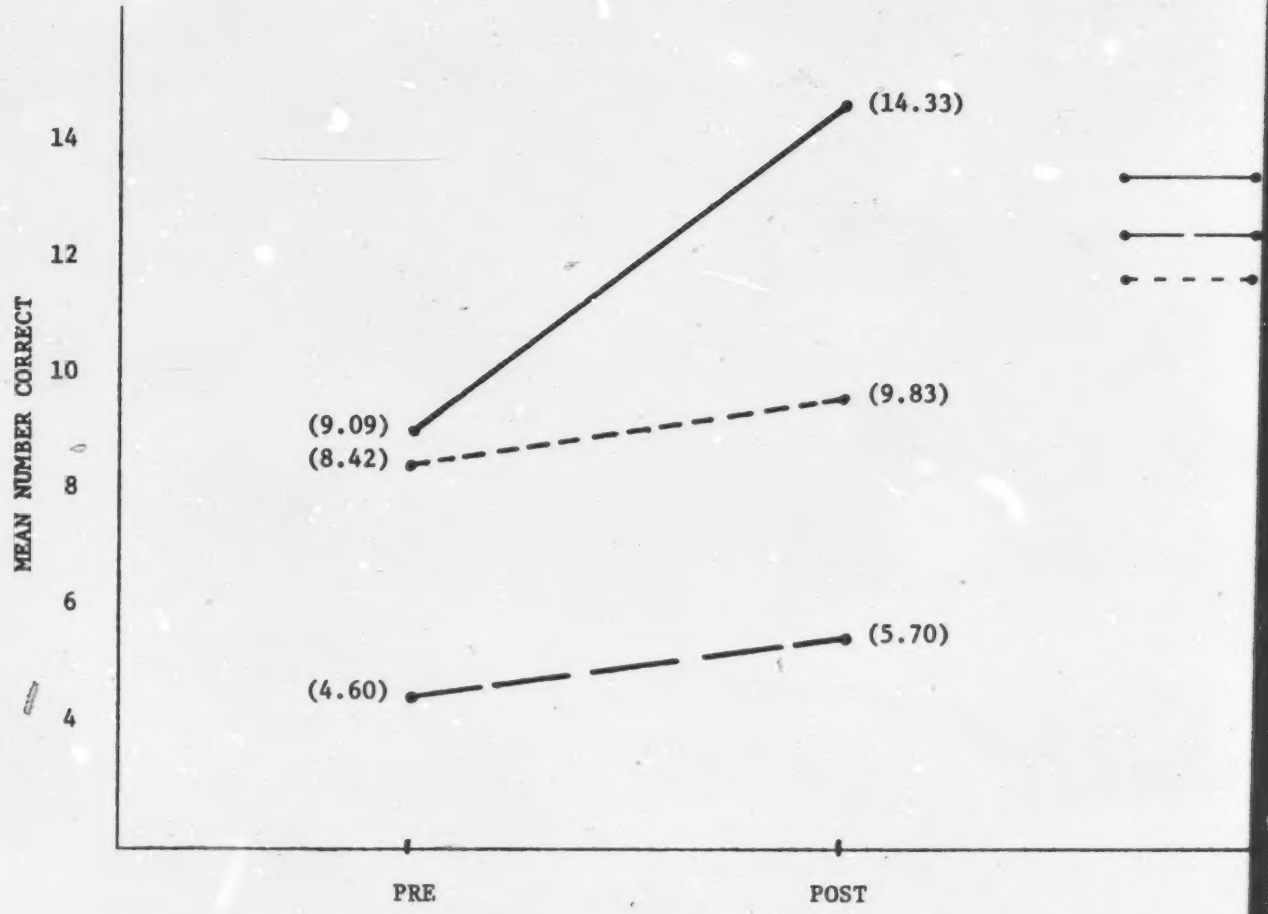
Money Expressive Performances

	Experimental		Hawthorne		Control	
	Pre	Post	Pre	Post	Pre	Post
$\bar{X}$	9.09	14.33	4.60	5.70	8.42	9.83
SD	3.92	3.39	4.81	4.30	5.37	5.62
n	33	33	10	10	24	24

Two-way Repeated Measures ANOVA

Source of Variance	df	MS	F	
Between Ss	66	-	-	
Treatment	2	347.96	9.42	$p < .001$
Error	64	36.94	-	
Within Ss	67	-	-	
Tests (Pre,Post)	1	354.66	86.93	$p < .001$
Treat. X Test	2	64.48	15.80	$p < .001$
Error	64	4.08	-	

Figure 2. Mean achievement level on the Money Expressive pretest and posttest for each tr



achievement level on the Money Expressive pretest and posttest for each treatment group.

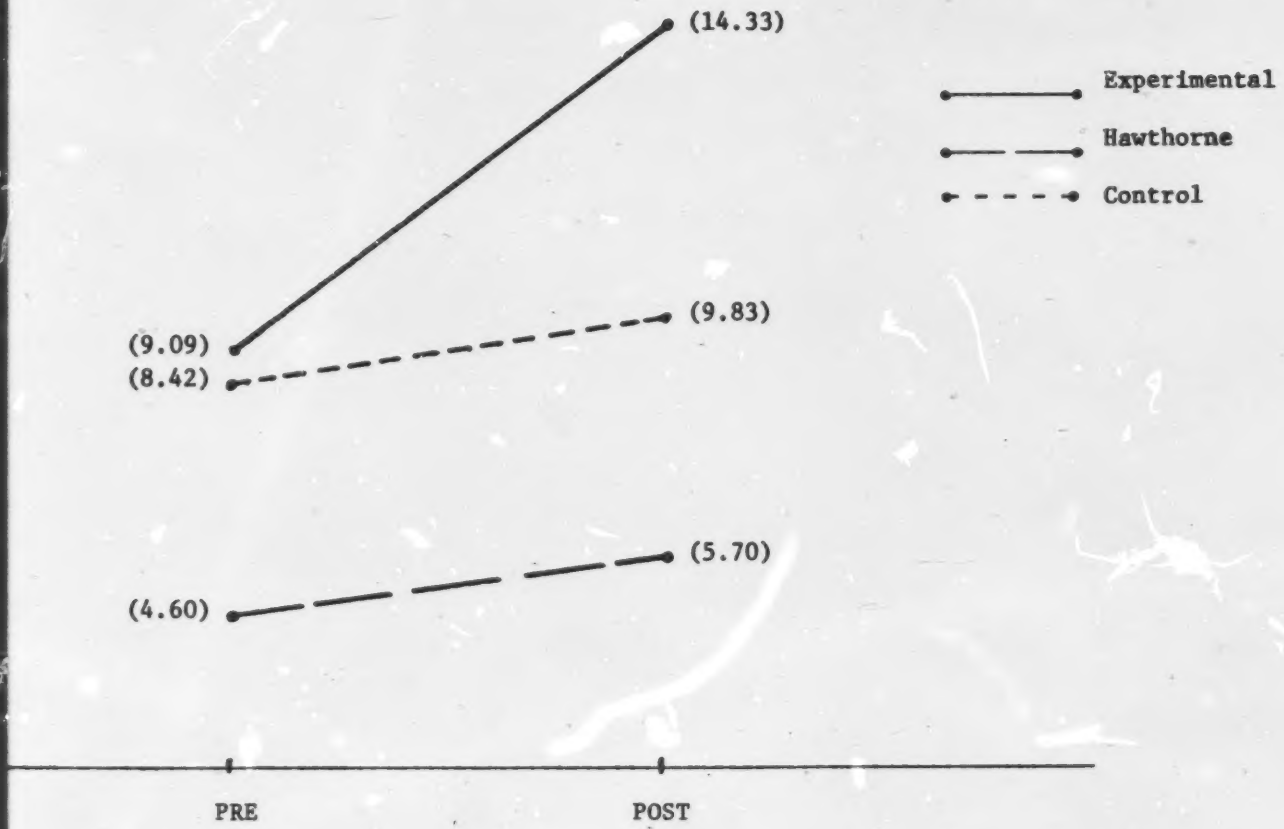


Table 7

Percent Experimentals Responding Correctly on Individual Items
by Where Instruction was Stopped

	Pre test	Bk 2 L7		Bk 3 L7		Bk 3 End		Bk 4 End	
Beginning to Book 2, Lesson 7		Pre	Post	Pre	Post	Pre	Post	Pre	Post
Describes trading situation	58	-	75	75	85	40	83	57	100
States "money" when related to store	69	-	75	67	76	60	94	78	85
Selects pictures of money	7	0	0	0	33	16	56	8	26
States "save" in response to definition	42	-	50	50	67	20	72	50	78
Labels a nickel	67	50	50	54	90	53	94	92	89
States "penny" in response to definition	64	-	75	67	90	40	100	78	100
States "dime" in response to definition	42	-	50	42	76	20	83	57	39
Selects dime as coin that buys most	31	25	25	27	62	32	83	36	70
Selects pictures of half dollar	44	0	50	27	95	58	94	56	100
Total numbers coins known	23	-	50	42	95	40	94	50	85
Orders 5 coins by value	23	0	25	14	33	37	83	24	74
Selects coins buying more nickel	24	25	0	9	48	32	72	32	67
		ENDED INSTRUCTION							
Book 2, Lesson 7 to Book 3, Lesson 7									
Describes why fake bill not real	67	-	50	58	67	70	83	64	74
States "bill" labeling 20 dollar	64	-	25	58	86	60	83	71	96
Selects picture of 5 dollar bill	46	25	50	27	95	63	94	52	92
States "fifty dollar bill"	37	25	75	36	71	42	83	36	39
Labels shopper as "customer"	3	-	50	0	0	0	50	7	33
Labels a cash register	33	-	50	17	43	20	83	57	85
Describes relative buying of quarter	58	-	75	50	76	50	78	71	81
States penny as "one cent"	54	50	75	41	76	63	100	60	81
Reads 5¢	81	-	75	75	71	80	89	85	92
Changes nickel for 5 pennies	26	0	25	14	33	32	83	36	63
Responds "change" to definition/5¢	8	-	25	0	10	20	50	7	30
States "dime" is 10 pennies	14	0	50	9	43	10	89	24	59
States "quarter" is "25 cents"	13	0	25	0	19	16	78	24	81
States "50 pennies in half dollar"	14	0	0	4	24	16	72	24	70
States "50 cent piece"	28	-	0	17	10	40	72	28	78
				ENDED INSTRUCTION					
Book 3, Lesson 7 to Book 3, End									
States dollar is "100 cents"	9	0	0	4	14	10	56	12	59
Reads $2	50	-	0	42	67	30	61	71	74
Reads $2.30	31	-	0	17	28	20	72	50	63
States 10 dollar bill = 2 fives	6	0	0	0	5	16	33	4	26
Correct count - 5 nickels	11	0	0	4	14	16	61	16	56
Counts combinations of coins (20¢)	17	0	0	4	14	21	56	28	33
Counts bills and coins ($2.32)	10	0	0	4	0	10	33	16	26
Counts $1 bill and coins ($2.35)	7	0	0	0	5	5	22	16	22
						ENDED INSTRUCTION			
Book 3, End to Book 4, End									
Labels price tag	33	-	50	42	24	20	44	36	56
States that cash is money	58	-	50	92	71	30	56	50	78
Labels "check"	39	-	50	33	48	30	72	50	81
States "change" to definition	33	-	0	33	10	40	50	28	44
Makes change 12¢ from quarter	0	0	0	0	0	0	6	0	4
								ENDED INSTRUCTION	

One group of Experimental subjects ended instruction at Book 2, Lesson 7, the first grouping of items. Yet in the second grouping, they showed improvement on items covering instruction they had not received. This phenomenon is also evident in the next two Experimental subgroups who did not complete all of the instruction. Such findings imply that the instruction results in some generalized transfer, facilitation, or learning-to-learn factor. In other words, instruction on even part of the content of the Money Unit resulted in the acquisition of additional objectives.

Table 8 presents the same breakdown of test items as Table 7, but presents the percentages of Experimental, Hawthorne, and Control subjects responding correctly to each item. In addition, for the Experimental group, it distinguishes between the percentages for those who received the instruction and those who did not. Clearly, when the performance of those children who received the instruction in the Money Unit is compared with that of children who did not receive instruction (Hawthornes, Controls, and Experimentals who did not receive instruction), differences are evident.

In general, Table 8 also reveals that the Control subjects tended to perform better than the Hawthorne subjects. Due to the confounding from MA and IQ characteristics of the subjects (i.e., Hawthornes were significantly lower on these two measures than the other two groups), it is difficult to determine whether or not any actual "Hawthorne" effects occurred in the present study. However, there was transfer in the Experimental group, where instruction in one part of the Money Unit resulted in better performance on objectives from material not yet

Table 8

Per Cent Responding Correctly in Each Treatment Group on Individual Items

	Experimentals Overall	Experimentals Receiving Instruction	Experimentals Not Receiving Instruction	Hawthorne	Control
Beginning to Book 2, Lesson 7					
Describes trading situation	90	90	-	42	48
States "money" when related to store	84	84	-	71	74
Selects pictures of money	34	34	-	10	26
States "save" in response to definition	71	71	-	42	64
Labels a nickel	88	88	-	62	71
States "penny" in response to definition	96	96	-	52	64
States "dime" in response to definition	81	81	-	35	58
Selects dime as coin that buys most	68	68	-	31	42
Selects pictures of half dollar	94	94	-	38	68
Total numbers coins known	88	88	-	39	64
Orders 5 coins by value	61	61	-	28	35
Selects coins buying more nickel	51	51	-	24	39
Book 2, Lesson 7 to Book 3, Lesson 7					
		(N=66)	(N=4)		
Describes why fake bill not real	73	74	50	52	61
States "bill" labeling 20 dollar	86	89	25	41	64
Selects picture of 5 dollar bill	91	94	50	42	77
States "fifty dollar bill"	81	82	75	41	74
Labels shopper as "customer"	28	27	50	0	3
Labels a cash register	78	80	50	32	42
Describes relative buying of quarter	78	79	75	48	77
States penny as "one cent"	84	85	75	41	55
Reads 5¢	84	85	75	61	71
Changes nickel for 5 pennies	57	59	25	24	32
Responds "change" to definition/5¢	28	29	25	3	13
States "dime" is 10 pennies	70	71	50	24	39
States "quarter" is "25 cents"	58	61	25	21	29
States "50 pennies in half dollar"	53	56	0	14	26
States "50 cent piece"	51	54	0	16	32
Book 3, Lesson 7 to Book 3, End					
		(N=45)	(N=25)		
States dollar is "100 cents"	41	58	12	17	29
Reads $2	64	69	56	29	48
Reads $2.30	51	67	24	22	45
States 10 dollar bill = 2 fives	20	29	4	21	26
Correct count - 5 nickels	41	58	12	21	26
Counts combinations of coins (20¢)	31	42	12	24	39
Counts bills and coins ($2.32)	18	29	0	10	16
Counts $1 bill and coins ($2.35)	16	22	4	10	19
Book 3, End to Book 4, End					
		(N=27)	(N=43)		
Labels price tag	43	56	35	13	19
States that cash is money	68	78	63	58	55
Labels "check"	67	81	58	48	52
States "change" to definition	33	44	26	10	26
Makes change 12¢ from quarter	3	4	2	14	29

presented. Such a finding would indicate that there are potential transfer or learning-to-learn effects from the instruction in the Money, Measurement and Time Program.

Community Location Comparisons

During the stage of formative evaluation, the Money Unit was written by teachers who had taught in an urban community and was pilot-tested with urban EMR children. To check the general effectiveness of the Money Unit for different types of communities, comparisons of results by location were made.

Table 9 presents the Money Skills posttest performance data for the three treatment groups when further defined in terms of community location. Results of the one-way analysis of variance carried out on each treatment group are also presented. Similar data for the Money Expressive Test are presented in Table 10.

Generally, the rural children scored higher than their suburban and urban counterparts. This difference was significant for Experimentals and Controls on the Skills test and for Controls on the Expressive Test. These differences may be due to the different ability levels of children placed in special class in these communities, and very likely is related to the MA and CA differences found between groups. The Money Unit appears to have been particularly efficacious for the suburban children. If it can be assumed that the scores of the Control and Hawthorne groups are those that the Experimentals would have achieved without instruction, then the suburban Experimentals tripled their knowledge of money skills and more than doubled their expressive ability. For the urban children,

Table 9

Comparisons of Money Skills Posttest Data for the Three Community Locations in each Treatment Group

	Urban	Rural	Suburban	F
Experimental				
$\bar{X}$	8.9	12.4	9.7	3.31
SD	5.2	5.0	4.3	($p < .05$)
n	16	29	25	
Hawthorne				
$\bar{X}$	4.8	8.5	2.7	2.76
SD	4.7	8.2	3.8	(ns)
n	5	11	13	
Control				
$\bar{X}$	7.0	13.3	3.1	12.91
SD	7.5	6.0	1.9	($p < .001$)
n	6	12	13	

Table 10

Comparisons of Money Expressive Posttest Data for the Three Community Locations in each Treatment Group

	Urban	Rural	Suburban	F
Experimental				
$\bar{X}$	12.3	13.7	13.7	< 1
SD	4.2	3.7	4.2	(ns)
n	16	29	36	
Hawthorne				
$\bar{X}$	6.2	8.0	7.7	< 1
SD	4.0	4.0	6.6	(ns)
n	9	10	12	
Control				
$\bar{X}$	9.5	13.4	6.9	6.31
SD	5.3	4.9	4.1	($p < .01$)
n	6	12	13	

the Experimental group scored better than the other two groups, particularly in the expressive area. In the rural communities, where all of the groups appear to have better money skills and expressive abilities, the Experimental subjects scored much better than the Hawthorne, but not statistically different from the Controls.

Retention

One of the aims of the developers of the Money Unit was to produce materials which would result in relatively "permanent" increases in the EMR child's ability to talk about and deal with money. To test for long term retention, the Money Skills and Expressive tests were readministered to Experimental subjects two months after instruction in the Money Unit had been stopped.

Forty-six children in the Experimental treatment group were given the retention test. These children were from the five classes in which instruction in the Money Unit was stopped. (The children in the three Experimental classes that continued instruction through the end of the year were not given retention testing.)

Both the posttest and long term retention data are presented in Table 11. These data indicated that after two months, the Experimental children had not forgotten what they had learned about money. In fact, their mean scores had actually increased, although the increases were not statistically significant. What is significant is the fact that the EMR youngsters, exposed to the Money Unit for only a few months, had more than doubled their knowledge of money skills and vocabulary and had retained this knowledge as long as two months.

Table 11

Money Skills and Expressive Test Scores for Experimental Subjects at Posttesting and Two Months Later (Retention)

	Posttest	Retention
Money Skills Test (20 items)		
$\bar{X}$	10.6	11.2
SD	4.9	5.2
n	70	46
Money Expressive Test (20 items)		
$\bar{X}$	13.4	14.6
SD	4.0	3.3
n	70	46

Teacher Evaluation of the Money Unit

All of the Experimental group teachers answered a questionnaire about the Money Unit. (See Appendix 1 for a copy of the questionnaire.) The number of years of teaching experience these teachers had varied from one to 25, with a mean of 7.2 years and a standard deviation of 6.7 years. The number of years teaching handicapped children ranged from less than one year up to 18 years ($\bar{X}$ = 5.4 years, SD = 5.4). All teachers were certified in special education.

On the evaluation forms, the teachers indicated that the mean preparation time for each teaching period was about 15 minutes. The average length of each teaching period was 25 minutes, and the unit was generally taught every day of the week. The room arrangement preferred by most teachers was one where the teacher, tape recorder, and book were in the center, with the children on the floor around them.

All of the teachers enjoyed using the Money Unit and would use it rather than another money instructional package when they teach money again. Most of the teachers (70%) felt the materials offered more diversity than most other materials and none reported getting tired of teaching with the materials. In general, all of the teachers thought the Money Unit was more useable, effective, and enjoyable than other commercial materials they had used. Seventy per cent of the teachers felt that all of the concepts covered in the Money Unit were important to children in the long run, and the rest of the teachers reported that most of the concepts were necessary. All teachers felt the children would remember the more important money concepts a year from the time

they learned them. All of the teachers reported that the materials were either "effective" or "very effective." They thought that 90 % of the children were more interested in the instruction in the Money Unit than they had been in other instruction.

The teachers did make some recommendations on their evaluation forms. While 80 % felt that the Unit was complete as it is, 20% requested more instruction at the end of the Unit (i.e., instruc- dealing with counting money and with making change). Most of the teachers requested that tests of the children's progress be inserted into the instruction at the end of key lessons or at the end of each book.

Other teacher reactions to the instruction and a summary of the data are available in Appendix 2.

Summary

The summative evaluation of the Money Unit described in the present paper served to document the effectiveness of the Unit for EMR children, and its useability in the classroom. The field-test of the Money Unit demonstrated that the Unit did, in fact, significantly increase the EMR child's knowledge of money skills and vocabulary. This increase was greater than that obtained by either a Control group or a Hawthorne control group.

The effectiveness of the instruction in the Money Unit was supported by the pretest and posttest gains, by the performance levels of individual items, and by the retention data. The data from retention testing is of

foremost important since they indicate that the EMR children who had received the Money Unit completely retained the skills and vocabulary after an interval of two months.

Analyses of community location effects indicated that the Unit was highly effective in rural and suburban communities, as well as in the urban communities (the setting in which the materials were developed, pilot-tested, and revised). The finding that the rural Controls performed significantly better than their urban and suburban counterparts suggested that these Control teachers might be engaging in special procedures or using special materials to teach money concepts to their children. When the Control teachers were asked to describe the money instruction they had used, if any, all responded that they had taught money. All teachers indicated that they had used materials they had developed themselves in addition to some worksheets and manipulable materials from published curriculums. Six of the teachers gave an estimate of the total number of days they had spent on money instruction. The three suburban teachers averaged 11 days, the two urban teachers averaged 9 days, and the one rural teacher taught money for 32 days during the year (the other rural teacher indicated that instruction was given individually so that children spent "as much time as they needed" receiving money instruction).

The useability of the Money Unit was also documented as a result of the present summative evaluation. All of the teachers who used the Money Unit indicated that they liked it and would prefer using it to other instructional materials. Most of the teachers thought the materials offered more diversity than most other materials, and were more useable,

effective and enjoyable than other commerical materials they had used before. Also, the teachers felt that the concepts covered in the Money Unit were important and necessary in the long run.

The Money Unit presents money skills and vocabulary which have been identified as important to the normal development of any child, especially the young EMR child (cf., Kolstoe, 1970; Nuffield, 1969; Peterson, 1973). The pretest data from the present field-test and from the formative evaluation of the Money Unit (cf., Thurlow, Krus, Howe, Taylor, and Turnure, 1974) indicated that these money concepts, while important for all children to learn,are particularly difficult for retarded children to master without instruction. The summative evaluation of the Money Unit has demonstrated its effectiveness and useability in the classroom, and has verified the belief that the Money Unit fulfills an important need in the education of the young EMR child.

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Footnotes

[1]The summative evaluation of the Money Unit was an extensive endeavor which could not have succeed without the help and cooperation of many individuals. Appreciation is extended to all school systems participating in the field-test, and especially to the teachers who allowed a great deal of testing and who responded willingly to all requests made of them. Special thanks are due to Joni Blumenfeld Troup, who scheduled and completed all testing, and who formed the major link between the Project and the teachers in the field test.

[2]Arthur M. Taylor is now Supervisor of Programs for the Mentally Retarded in the St. Paul Public School System. His address is: Special Education Department, MR Program, St. Paul Public Schools, 360 Colborne, St. Paul, Minnesota 55103.

Appendix 1. Teacher Evaluation Form.

Unit Evaluation

1. Where did you start teaching in the Money Unit? Book_____ Lesson_____

2. Where did you stop teaching in the Money Unit? Book_____ Lesson_____

3. Please indicate:
   a. The average preparation time for each teaching period: _____ minutes
   b. The average length of each teaching period: _____ minutes
   c. The average number of teaching periods per five day week: _____

4. Please indicate the percentage of time in which instruction was given to:

   Whole class_____%
   Small groups_____%
   Individuals_____%

---

1. How did you feel about using the Money Unit?
   _____ I enjoyed it very much
   _____ I thought it was alright
   _____ I would rather use something else next time

2. Have you used any other commercial materials or math texts to teach money concepts? _____ YES _____ NO
   If YES, what did you use?

   a. If given a choice of materials to use to teach money:
      _____ I would prefer to use this Money Unit rather than others
      _____ I would use either this Money Unit or other money materials; wouldn't matter
      _____ I would prefer to supplement this Money Unit with other materials
      _____ I would prefer to use other materials all together

   b. Compared to other commercial materials, was the Money Unit
      More useable? _____ YES _____ NO
      More effective? _____ YES _____ NO
      More enjoyable? _____ YES _____ NO

3. Did you get tired of teaching with these materials?
   _____ Yes, the repetiveness was boring
   _____ Sometimes, but the repetiveness is necessary to teach my students
   _____ No, these materials offer more diversity than most

4. How important do you think the concepts covered in the Money Unit are to the children in the long run?

_____ All concepts are essential
_____ Most concepts are necessary
_____ Concepts are good, but not necessary
_____ Most concepts are not needed

5. Do you think the children will remember the more important money concepts a year from now? _____ YES _____ NO

6. How effective were the materials:

_____ Very effective
_____ Effective
_____ Could have been more effective
_____ Not very effective at all

7. How interested were the children in the Money instruction?

_____ More interested than usual
_____ About as interested as in other instruction
_____ Not very interested

Please rate the following aspects of the Money Unit in terms of their appropriateness (or, completeness), <u>for you as the teacher</u>. Rate each item from 1 to 5, with 1 being the least appropriate (or, complete) and 5 being the most appropriate (or, complete).

	Appropriateness	Completeness
a. Inservice training		
b. Teacher's Editions, in general		
c. Introductory pages to Teacher's Editions		
d. Directions to teacher in lessons		
e. Pre-activities		
f. Lesson Organizers		
g. Scripts accompanying tape presentations		
h. Post-activities		
i. Worksheets		
j. Transparencies		

Please rate the following aspects of the Money Unit in terms of their effectiveness, enjoyability, interest, and attention-focusing ability, for the children in your classroom. Rate each item from 1 to 5, with 1 being the least effective (enjoyable, interesting, or attention-focusing) and 5 being the most effective (enjoyable, interesting, or attention-focusing).

	Effectiveness	Enjoyability	Interest	Attention-focusing
a. Introductory lesson (for preparation)				
b. Mr. Money				
c. Pre-activities				
d. Tape recordings				
e. Worksheets				
f. Transparencies				
g. Art work in books, worksheets, etc.				
h. Post-activities for review				
i. Post-activities to expand concepts				
j. Post-activities to build skills				

1. Did you have any problems with the pre-testing and/or post-testing of the unit? _____ YES _____ NO
   If YES, what were the problems?

2. Where did the pre-test results suggest that you start teaching the Money Unit? Book_____ Lesson_____

3. Did you agree with the recommended starting point? _____ YES _____ NO

4. Did you teach all the lessons between the points at which you started and stopped instruction? _____ YES _____ NO
   If NO, what did you skip?

5. At what mental age would you recommend that children could start in the Money Unit? _____

6. Are there any children for whom you feel the Money Unit is not appropriate?

7. How long do you think it would take your children to complete the entire Money Unit?

8. How long do you think it would take your children to cover the same content as presented in the Money Unit, without the use of the program?

9. Which of the following teacher-administered assessment devices would you like to see added to the Teacher's Editions to evaluate the children's progress?

_____ Lesson tests
_____ Book tests
_____ Unit tests
_____ None

---

1. Look at the sequence of the entire Money Unit. Is there any way you would change the sequence? _____ YES _____ NO
If YES, how?

2. How do you feel about the completeness of the Money Unit?

_____ Needs more instruction at the beginning
_____ Needs more instruction at the end
_____ Unit is complete as it is

Frequently, when a new program of instruction is introduced into a classroom, other individuals see and react to the materials. Please rate the reactions of any of the following individuals to the Money materials, on a scale of 1 to 5 (1 = negative reaction; 5 = positive reaction).

_____ Principal
_____ Parents
_____ Regular classroom teachers
_____ Aides
_____ Others

Please indicate:

a. Number of years of teaching experience (include all teaching except student teaching) _____
b. Number of years teaching educationally handicapped children _____
c. Are you certified in special education? ____ YES ____ NO

If you have the time and the inclination, are there any suggestions about the testing or the materials you would like to share with us?

Is there anything else you would like to tell us?

And, a FEW more general questions . . . . .
These questions have "popped" up as a result of some comments we have received. Please let us know how you feel.

Do you think the Money, Measurement and Time Program should be modified into a program of individualized instruction?

---

1. Did you like using the Big Picture Book? _____ Please note any suggestions you have for making the Big Picture Book more useable and/or more effective.

2. Did you like the children to have their own texts? _____ Please note any suggestions you have for making the Children's Picture Books more useable and/or more effective.

3. How do you think the student texts should be supplied to the classroom?
   _____ Only in the form of Big Picture Books
   _____ Only in the form of individual Children's Picture Books.
   _____ In both forms, with both being used during the same tape presentation
   _____ In both forms, with the teacher selecting the form to be used during a given tape presentation
   _____ In one form for certain books and the other form for other books (i.e., as it is now)

4. What do you think would be the most effective and useful way to inform the teacher of the content of the tape presentations?
   _____ Complete script (i.e., as is)
   _____ Summary of script
   _____ No script at all

Please describe the room arrangement you used during the tape presentations (e.g., children on floor around tape player, children at desks with tape player in front of room, etc.). Draw a diagram if this will clarify your response.

Is there any other room arrangement you think would be best for optimizing the effectiveness of the tape presentations?

What do you feel would be the best way to introduce a unit in the Money, Measurement and Time Program to a teacher planning to use it in the classroom?

_____ Inservice training session
_____ Written document describing unit flow, books, etc.
_____ Both inservice training and written document

The Teacher's Introduction to the Money, Measurement and Time Program was designed to familiarize the teacher with the total program. Please briefly describe your reactions to the Teacher's Introduction and any recommendations you have for improving it.

Appendix 2. Teacher Evaluations of the Money Unit.

A. Teacher Characteristics

1. Number of years of teaching experience (all teaching except student teaching):
   $\bar{X}$ = 6.7 years
   SD = 7.2
   Range: 1-25

2. Number of years teaching educationally handicapped children:
   $\bar{X}$ = 5.4 years
   SD = 5.4
   Range: 0-18

3. All 10 teachers are certified in special education.

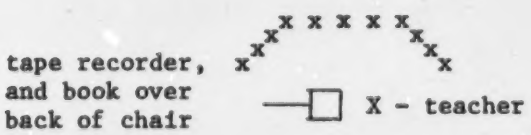
B. Teaching Characteristics

1. Average preparation time for each teaching period:
   $\bar{X}$ = 15.2 minutes
   SD = 8.6
   Range: 5-30 minutes

2. Average length of each teaching period:
   $\bar{X}$ = 25.0 minutes
   SD = 6.2
   Range: 15-20 minutes

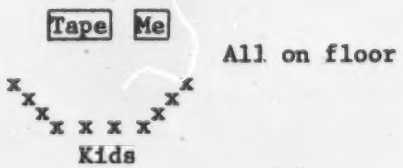
3. Average number of teaching periods per five day week:
   $\bar{X}$ = 4.9
   SD = 2.0
   Range: 3-10

4. Room arrangements (asked of only 4 teachers):
   a. "Children on floor around tape player with book on chart stand in front of them."
   b. "Children on floor."



   c. "Children would sit on floor around me and the big picture book."

   d.



NOTE: None of the teachers asked felt any other room arrangement would be more appropriate.

C. General Reactions to the Money Unit

1. Item: "How did you feel about using the Money Unit?"

   100% "I enjoyed it very much"
   0% "I thought it was all right"
   0% "I would rather use something else next time."

2. Item: "Did you get tired of teaching with these materials?"

   0% "Yes, the repetiveness was boring."
   50% "Sometimes, but the repetiveness is necessary to teach my students"
   70% "No, these materials offer more diversity than most"

   NOTE: Two teachers marked both the second and third choices, one indicating that second choice was appropriate for her younger group and third choice for her advanced group. Another teacher indicated that even if she sometimes became bored, the children never did.

3. Item: "How important do you think the concepts covered in the Money Unit are to the children in the long run?"

   70% "All concepts are essential"
   30% "Most concepts are necessary"
   0% "Concepts are good, but not necessary?
   0% "Most concepts are not needed"

4. Item: "Do you think the children will remember the more important money concepts a year from now?"

   100% Yes 0% No

5. Item: "How effective were the materials?"

   60% "Very effective"
   40% "Effective"
   0% "Could have been more effective"
   0% "Not very effective at all"

6. Item: "How interested were the children in the Money instruction?"

   90% "More interested than usual"
   10% "About as interested as in other instruction"
   0% "Not very interested"

D. Answers to Specific Questions

1. When asked to name other materials the teachers had used to teach money, the following were noted:

Houghton Mifflin (3 teachers mentioned this text)
Silver Burdett (Book 1)
Money Sense
Individually written units
District sheets
Manipulative devices
Continental Press (commercial dittos)

Of the six teachers who indicated they had used other materials to teach money, the following reactions were given:

83% "I would prefer to use this Money Unit rather than others"
0% "I would use this Money Unit or other money materials; wouldn't matter"
33% "I would prefer to Supplement this Money Unit with other materials"
0% "I would prefer to use other materials all together"

NOTE: One teacher marked both the first and the third choices. No explanation was given.

When asked to compare the Money Unit to other commercial materials they had used, the Money Unit was rated as:

More usable?	100%	Yes	0%	No
More effective?	100%	Yes	0%	No
More enjoyable?	100%	Yes	0%	No

2. Item: "At what mental age would you recommend that children could start in the Money Unit?"

(7 responses) $\bar{X} = 5.0$, SD = 0.8, Range = 4-6

3. Item: "Look at the sequence of the entire Money Unit. Is there any way you would change the sequence?"

0% Yes 100% No

4. Item: "How do you feel about the completeness of the Money Unit?"

0% "Needs more instruction at the beginning"
20% "Needs more instruction at the end"
80% "Unit is complete as it is"

NOTE: One teacher indicated she sould like more tapes dealing with "counting various coins"

5. When asked to rate the reactions of other individuals to the Money materials, the following were given:
(Rating is on scale of 1 to 5 from most negative reaction to most positive)

4.4	Principal (n=5)
4.8	Parents (n=7
4.8	Regular classroom teachers (n=7)
5.0	Aides (n=6)
5.0	Others (n=2)

6. Item: "Which of the following teacher-administered devices would you like to see added to the Teacher's Editions to evaluate the children's progress?"

40%	Lesson tests
70%	Book tests
60%	Unit tests
0%	None

NOTE: Most teachers responded more than once. One teacher not marking a specific choice indicated that there should be tests after "every few" lessons.

7. Item: "Are there any children for whom you feel the Money Unit is not appropriate?"

Responses:

"I feel that some children in my room were not ready for"
"All children get something of value from most of the Unit but last part of Book IV is too difficult for all but a few."
"I believe Books 1 & 2 are appropriate for any child, but Books 3 & 4 should only be taught to those who understand numbers 1-100."
"No" (teachers)
"Some could not handle it in a group situation."
"Yes, after the exact value of the coins."
"No, I felt all my children needed the unit."
"Those that have no interest in learning money."

8. Item: "How long do you think it would take your children to complete the entire Money Unit?" (a) "How long do you think it would take your children to cover the same content as presented in the Money Unit, without the use of the program?" (b)

(a)	(b)
4 months	NR
16 weeks	?
3-4 months	1 year
6 months	a lot longer
4 months; some shorter	will vary 2-6 months

(a)(cont.)	(b)(cont.)
Couldn't complete because of ability levels	NR
2 years (because of math ability)	"With a comparable buildup of skill it should be equal."
1 full year	"It would be hard to say"
about 3 months	"A lot longer to cover content and understand it - 6 months"
4-6 months	"Forever!"

E. Teacher Reactions to Specific Aspects of Money Unit (mean rating on scale of 1 to 5, from negative to positive; the number in parentheses is the n)

	Appropriateness	Completeness	Average
1. In-service training	3.9 (8)	3.7 (9)	3.8
2. Teacher's Editions, general	5.0 (9)	5.0 (10)	5.0
3. Introductory pages	4.3 (10)	4.4 (10)	4.4
4. Directions to teacher in lessons	4.7 (10)	5.0 (9)	4.8
5. Pre-Activities	4.8 (10)	4.7 (9)	4.8
6. Lesson Organizers	4.7 (10)	4.7 (9)	4.7
7. Scripts for tapes	4.9 (10)	4.9 (9)	4.9
8. Post-Activities	4.7 (10)	4.2 (9)	4.5
9. Worksheets	4.2 (10)	4.3 (9)	4.2
10. Transparencies	4.5 (10)	4.2 (9)	4.4

F. Children Reactions to Specific Aspects of Money Unit (mean rating by teacher on scale of 1 to 5, from negative to positive; all 10 teachers responded to every item).

	Effectiveness	Enjoyability	Interest	Attention Focusing	Average
1. Introductory Lesson	4.8	4.8	4.7	4.7	4.8
2. Mr. Money	4.9	4.9	4.9	4.9	4.9
3. Pre-Activities	4.7	4.4	4.5	4.6	4.6
4. Tapes	4.8	4.9	4.6	4.6	4.7
5. Worksheets	4.2	4.1	4.0	4.2	4.1
6. Transparencies	4.0	3.9	3.8	4.0	3.9
7. Art Work	4.1	4.2	4.1	4.0	4.1
8. Post Acts: Review	4.8	4.5	4.4	4.5	4.6
9. Post Acts: Expand	4.5	4.5	4.4	4.3	4.4
10. Post Acts: Skills	4.5	4.5	4.4	4.4	4.4

G. Specific Questions about Materials in general (asked of 4 teachers only)

1. Item: "Did you like using the Big Picture Book?"

100% Yes 0% No

"Did you like the children to have their own texts?"

33% Yes 66% No (3 responses, one teacher did not use them)

Specific Comments:

"One large teacher book for all to focus upon seems more reasonable for young and distractible children."
"Like the big picture much better than the individual books. Much easier to hold classes attention with big books; didn't use individual books."
"It would be helpful if it [Big Picture Book] could stand up without holding it."

2. Item: "How do you think the student texts should be supplied to the classroom?"

0% "Only in the form of Big Picture Books."
0% "Only in the form of individual Children's Picture Books"
25% "In both forms, with both being used during the same tape presentation"
50% "In both forms, with the teacher selecting the form to be used during a given tape presentation."
25% "In one form for certain books and the other form for other books (i.e., as it is now)"

3. Item: "What do you think would be the most effective and useful way to inform the teacher of the content of the tape presentations?"

100% Complete script (as it is)
0% Summary of script
0% No script at all

4. Item: "Do you think the Money, Measurement and Time Program should be modified into a program of individualized instruction?" (1 no response)

"Yes"
"No, teacher can individualize herself as she sees fit - the children need some whole group instruction."
"Yes. The beginning works fine in a group, but when the money counting begins - it almost has to be completely one to one."

5. Item: "What do you feel would be the best way to introduce a unit in the Money, Measurement and Time Program to a teacher planning to use it in the classroom?"

25%	In-service training
0%	Written document describing unit flow, books, etc.
75%	Both in-service training and written document.

H. Teacher Comments (ones not specifically elicted by questionnaire)

1. "I eliminated some post-activities that were too difficult (counting by 5's for example) - I went ahead and taught value of half dollar."
2. "I loved teaching the unit and hope to do it again - I think I could do better next time but felt very comfortable teaching it. I can hardly wait to start measurement."
3. "More tapes for post-activities. Children enjoy them and learn from them. This has been an enjoyable experience of practical value to the youngsters. I appreciate very much the opportunity of using these materials and I extend my thanks for being allowed to keep them.

   "I realize my comments have not been specific, but the unit is so complete it is difficult to pinpoint spots where it could be improved. However, I believe more tapes would be helpful.

   "The coins on the worksheet are not clearly pictured and there was often confusion between the nickel and quarter as children worked on them.

   "Unit tests as parts were completed would also be helpful."
4. "I would recommend that the children have concepts of the numbers 1-100 before starting this program."
5. "It was an absolute pleasure to teach this unit! Everything was all together and so organized. I didn't have to search anywhere for supplementary materials, like I usually do!"
6. "I knew this unit really worked when a mother mentioned at conferences that 'Now he asks for dollars. He used to ask for nickels and dimes!' Ha!"
7. "I was very pleased with the entire money unit. I only wish I could have finished it this year. The class was very enthusiastic about 'Mr. Money.' It was a time during the day that they looked forward to.

   "I felt they (children) learned and retained most of the concepts presented. I am looking forward to the results of the post-tests."
8. "I think some provision must be made for individual differences."
9. "It was very hard for my students to recognize coins on the worksheets. It would be nice to have pictures of actual coins instead of illustrations."
10. "My children lost interest after a month or so because of the same pattern followed in the lessons. The idea of giving each student his own workbook restored interest."

11. "[To start Money Unit, the children] must have some number ability - and interest in money."
12. "I found the program easy to comprehend. The problems that came up had nothing to do with your program content - But rather with students time to do activities. We do much integration so there was no chance to do the unit daily."
13. "I really enjoyed the organization of the lessons and the children loved Mr. Money."
14. "Add more worksheets. The kids enjoy the unit -- money is a highly motivating subject, they really liked Mr. Money and the pictures. The organization is great! I never could have taught such a thorough unit. My kid's parents have even made positive remarks about their children's progress."

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Center in Education of Handicapped Children

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